

PARAMETER SETTING APPARATUS AND PARAMETER SETTING  
METHOD, INFORMATION RECORDING APPARATUS AND  
INFORMATION RECORDING METHOD, AND INFORMATION  
RECORDING MEDIUM

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BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a technical field of a parameter setting apparatus, a parameter setting method, an information recording apparatus, an information recording method, and an information recording medium. More particularly, it relates to a technical field of a parameter setting apparatus and a parameter setting method for setting a recording parameter, which is used for recording information to a recording medium, before a recording of information, an information recording apparatus and an information recording method, including the above parameter setting apparatus, for recording information, and an information recording medium in which a setting program for setting the recording parameter is recorded in a readable way by a computer.

20 2. Description of the Related Art

Recently, a DVD that is an optical disk having extremely higher storage capacities than a conventional CD (Compact Disc) is standardized, and a read-only DVD is in general use.

Further, not only the read-only DVD but also a rewritable progresses in standardization.

As the recordable DVD, there are a DVD-R (DVD-Recordable) that is a DVD capable of recording information only once (namely,

capable of writing once) and a DVD-RW (DVD-Re-Recordable) capable of recording information multiple times, and the both DVDs are sequentially being standardized.

Generally, when information is recorded in the recordable DVD,  
5 optical beams for recording, which is intensive-modulated in accordance with the information to be recorded, is irradiated on the DVD so as to record the information. Therefore, it is necessary to perform calibration processing on the intensity of the optical beams (hereinafter, referred to as a recording power simply) every time  
10 information is recorded. This is why there is some case where the optimum recording power at the information recording may vary, caused by a stain of the recordable DVD itself, temperature, or a time-varying reflectivity on the information recorded surface.

Accordingly, the above DVD-R standard defines that an area  
15 referred to as a PCA (Power Calibration Area) and an RMA (Recording Management Area) should be at a position inward from the lead-in area in the DVD-R, in order to do the calibration processing.

The PCA is divided into several sectors and the calibration processing will be executed by using one or several sectors. More  
20 concretely, in the PCA corresponding to one or several sectors, while increasing the recording power step-by-step from a predetermined minimum value to a predetermined maximum value, setting signals having the random pulse width, for example, from 3T to 11T (T is the time unit for use in recording information by the information recording apparatus R) are sequentially recorded, and the recorded setting signals are sequentially detected and reproduced, from that one recorded with the minimum recording power. The recording power used for recording

a setting signal in which the peak level is equal to the bottom level in every reproduced signal corresponding to the above pulse width at a time of the playback, is set as the optimum recording power of the optical beam in the information recording, and thereafter, actual  
5 recording of the recording information is executed by use of the optical beam of the optimum recording power.

The optimum recording power thus calculated and the number of a sector within the PCA used for setting the optimum recording power (in a short, the number of a used sector) are recorded within the  
10 RMA in a distinguishable way, as the calibration information and thereafter, the recording of the actual recording information starts.

In the above-mentioned DVD-R, since the information can be recorded only once on the overall surface thereof, a sector within the PCA used once for the optimization of the recording power cannot be  
15 used for the optimization thereafter. At this time, if a new recording power is optimized by use of the used sector by mistake, the recording power cannot be optimized accurately, thereby failing in the accurate information recording thereafter.

In the above DVD-R standard, in the next calibration processing  
20 of the recording power, standardized is that a sector within the PCA which has never been used for the calibration processing so far is retrieved by referring to the description within the RMA and that the calibration processing of the recording power is executed by use of the retrieved non-used sector.

25 However, that there are 400 areas capable of describing calibration history in the RMA, is standardized, and the timing (for example, at an eject time of the DVD-R after finishing recording) when